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PREDICTION OF CARDIAC RESYNCHRONIZATION THERAPY RESPONSE - VALUE OF CARDIAC 123-IODINE META-IODOBENZYLGUANIDINE IMAGING

ACC Poster Contributions
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Background: It is unclear whether sympathetic abnormality, as assessed with cardiac 123-iodine meta-iodobenzylguanidine (123I-mIBG) imaging, can influence left ventricular (LV) reverse remodeling post cardiac resynchronization therapy (CRT). This study aimed to evaluate the usefulness of cardiac 123I-mIBG parameters in predicting CRT response.

Methods: A total of 101 heart failure patients referred for CRT were included. All patients underwent cardiac 123I-mIBG imaging prior to CRT. Heart-to-mediastinum ratio (HMR) and myocardial washout rate were obtained from planar imaging while SPECT imaging was performed to obtain summed 123I-mIBG SPECT defect score. Baseline echocardiography was performed including the assessment of LV dyssynchrony. At 6 months, echocardiography was repeated and CRT response was defined as a reduction of >15% in LV end-systolic volume.

Results: Fifty-six patients showed CRT response at 6 months. Responders were less likely to have ischemic etiology (61% vs. 87%, p=0.006) but more extensive LV dyssynchrony (74+43 ms vs. 54+41 ms, p=0.03) at baseline. On 123I-mIBG imaging, CRT responders had higher early (1.59+0.21 vs. 1.48+0.18, p=0.009) and late HMR (1.48+0.20 vs. 1.33+0.16, p<0.001), lower washout rate (6.6+5.5% vs. 10.0+6.6%, p=0.008) and lower early summed SPECT defect score (20.4+8.9 vs. 25.6+9.9, p=0.01). On multiple logistic regression analysis, every 0.1 unit increase in late HMR was independently associated with response to CRT (OR=1.49, p=0.013). Importantly, the combination of late HMR and LV dyssynchrony resulted in a significantly improved prediction of CRT response over LV dyssynchrony alone, as the c-statistic increased from 0.63 to 0.75 (p=0.044).

Conclusions: Baseline late HMR on 123I-mIBG planar imaging has an incremental value, in addition to baseline LV dyssynchrony, for prediction of response to CRT in patients with advanced heart failure.